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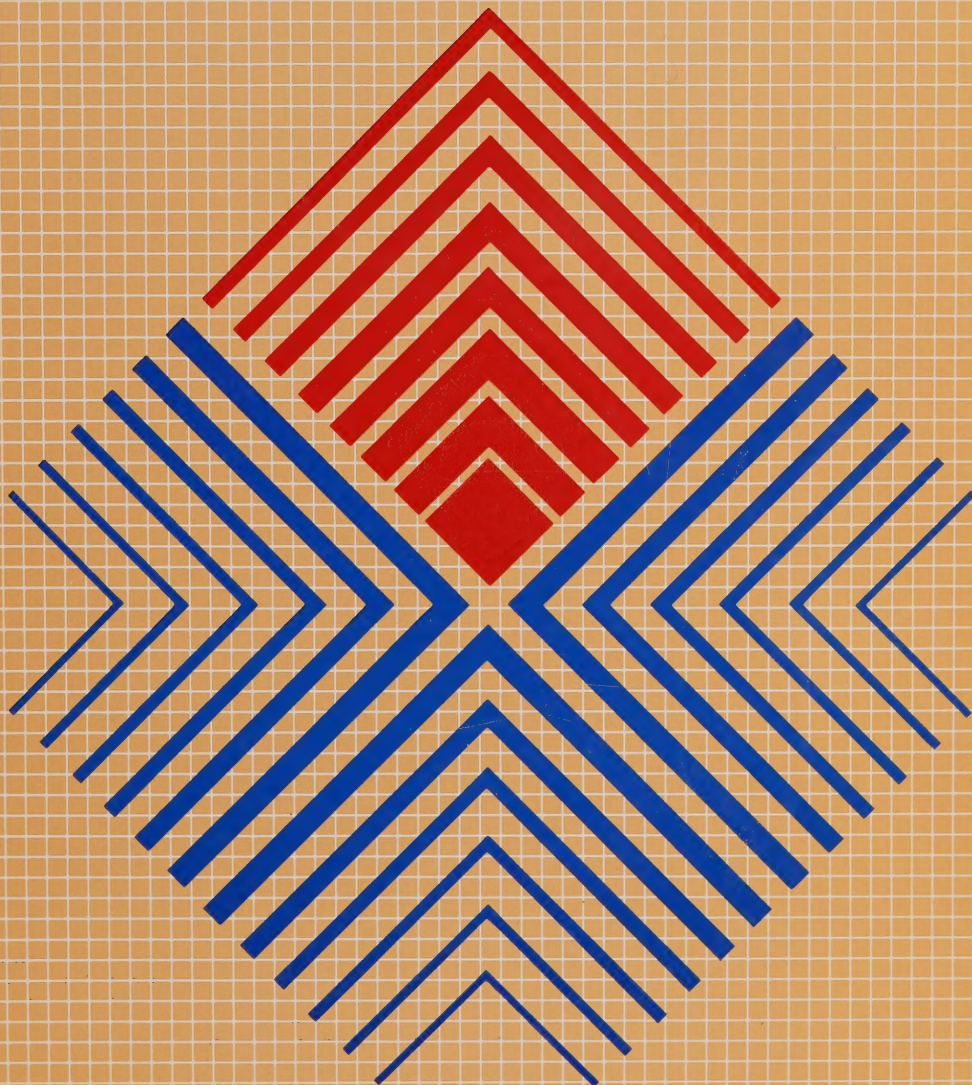
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MANPOWER TRAINING NEEDS SURVEY
OF SKILLED WORKERS IN THE
ONTARIO PLASTICS PROCESSING
INDUSTRY: 1982 - 1986

A publication of
**The Ontario
Manpower
Commission**





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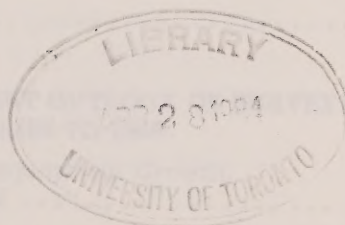
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Manpower Training Needs Survey of Skilled Workers in the
Ontario Plastics Processing Industry: 1982 - 1986



Ontario Manpower Commission

May, 1983

TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES	iii
LIST OF APPENDICES	v
INTRODUCTION	1
CHAPTER I: OCCUPATIONAL PROFILE OF SURVEY PARTICIPANTS	
1.1 The Plastics Processing Industry in Ontario	3
1.2 Profile of Survey Participants	3
1.3 Employment Characteristics of the Responding Firms	5
1.4 Employment in Surveyed Job Categories	5
1.5 Variations in Occupational Distribution	9
1.6 Pay Scales	11
CHAPTER II: EMPLOYMENT OUTLOOK OF SURVEYED JOB CATEGORIES TO 1986	
2.1 Projected Employment Growth, 1982-1986	13
2.2 Projected Employment Growth by Location, Size, and Type of Business, 1982-1986	16
2.3 Projected Retirement, 1982 - 1986	16
2.4 Positions Filled from Within, 1982 - 1986	18
2.5 Positions Filled from Within by Location, Size, and Type of Business, 1982-1986	21

CHAPTER III:	OCCUPATIONAL HIRING DIFFICULTIES AND SOURCES OF SUPPLY	
3.1	Difficulty in Obtaining and Retaining Skilled Workers	23
3.2	Expected Future Hiring Difficulties	25
3.3	Perceived Reasons For Future Hiring Difficulties	26
3.4	Sources of Supply	28
 CHAPTER IV:	 TRAINING FOR SURVEYED JOB CATEGORIES	
4.1	Method of Training Current Employees	29
4.2	Types of Training Programs Provided	30
4.3	Types of Training Programs Recommended	31
 CHAPTER V:	 SUMMARY OF MAJOR FINDINGS	
5. 1	Employment Profile of Survey Participants	33
5. 2	Occupational Characteristics	33
5. 3	Pay Scales	34
5. 4	Projected Employment Growth	34
5. 5	Variations in Projected Employment Growth by Location, Size, and Type of Business	34
5. 6	Projected Retirement	35
5. 7	Positions Filled from Within	35
5. 8	Hiring Difficulties	35
5. 9	Sources of Supply	36
5.10	Training Activities	36
5.11	Types of Training Programs Recommended	36
 APPENDICES		 37

LIST OF TABLES

	<u>Page</u>
TABLE 1 : Total Employment by Type of Work and Sex, 1982	6
TABLE 2 : Employment by Major Job Category, 1982	8
TABLE 3 : Employment by Major Occupational Group, 1982	9
TABLE 4 : Percent Distribution of Employment by Major Occupational Group, 1982	10
TABLE 5 : Comparison of Pay Scales by Major Occupational Group, 1982	11
TABLE 6 : Projected Employment Growth by Major Job Category, 1982 - 1986	14
TABLE 7 : Projected Employment Growth by Major Occupational Group, 1982 - 1986	15
TABLE 8 : Projected Retirement by Major Occupational Group, 1982 - 1986	17
TABLE 9 : Positions Filled From Within As a Percentage of Projected Additional Manpower Needs by Major Job Category, 1982 - 1986	19
TABLE 10 : Positions Filled From Within As a Percentage of Projected Additional Needs by Major Occupational Group, 1982 - 1986	20

TABLE 11 :	Difficulty in Obtaining and Retaining Manpower by Major Job Category	24
TABLE 12 :	Expected Future Hiring Difficulties by Major Occupational Group.....	25
TABLE 13 :	Reasons for Hiring Difficulties by Location, Size, and Type of Business.....	27
TABLE 14 :	Method of Training Current Employees	30
TABLE 15 :	Types of Structured Training Programs Needed	32

LIST OF APPENDICES

	<u>Page</u>
APPENDIX A : STATISTICAL TABLES	
Table 1 : Profile of Survey Participants	39
Table 2 : Total Employment by Location, Size and Type of Business.....	40
Table 3 : Employment by Major Occupational Group, 1982	41
Table 4 : Pay Scale by Job Category, 1982	42
Table 5 : Projected Employment Growth by Location, Size and Type of Business, 1982 - 1986	43
Table 6 : Projected Retirement by Major Job Category, 1982 - 1986.....	44
Table 7 : Positions Filled from Within As a Percentage of Projected Additional Manpower Needs by Location, Size, and Type of Business, 1982 - 1986	45
Table 8 : Types of Structured Training	46
APPENDIX B : SURVEY METHODOLOGY	47
APPENDIX C : SURVEY QUESTIONNAIRE AND JOB DESCRIPTIONS	49

INTRODUCTION

This report presents the findings of a manpower needs survey for 48 skilled occupations in the plastics processing industry in Ontario over the 1982 - 1986 period. The main objective of the study was to determine both the need for, and the type of, training programs required to ensure an adequate supply of skilled workers for the plastics industry.

During the second quarter of 1982, the Society of the Plastics Industry (SPI) of Canada, in conjunction with the Canada Employment and Immigration Commission, the Ontario Ministry of Colleges and Universities, and the Ontario Manpower Commission conducted a national survey of 158 major employers in the Canadian plastics processing industry. Ontario accounted for 90 survey participants.

The Ontario data presented in this report were collected mainly through personal interviews. The Human Resources Development Committee of the SPI of Canada designed the survey questionnaire and retained two industry experts, Messrs. Jim Boles and Dennis Taylor, to conduct interviews in Ontario, with funding from the Ontario Ministry of Colleges and Universities and the Ontario Manpower Commission. The Canada Employment and Immigration Commission and the Shell Canada Chemical Company provided computer facilities for tabulating the survey data. The Ontario Manpower Commission carried out the analysis and prepared the Ontario report, while the national report was prepared by the SPI of Canada.

Although the survey revealed some interesting trends on future manpower and training requirements of the 48 skilled occupations in the plastics industry, the findings do have some limitations. Firstly, the survey was conducted in the second quarter of 1982 when the Canadian plastics industry experienced the worst drop in production in its history. Many responding firms did not provide estimates on future manpower requirements

because of extreme uncertainty of future contracts. Secondly, the sample size of the study was not very large, and by further grouping the respondents by location, size, and type of business, statistics pertaining to each breakdown may not be as representative as those of the overall sample. Readers are, therefore, cautioned against generalizing on the basis of the survey results, which should be viewed only as an assessment of the information provided by the 90 responding firms.

This report has five parts: Chapter I includes the profile of the survey respondents, the employment characteristics of the 48 surveyed occupations and their pay scales; Chapter II analyzes the employment outlook of the surveyed occupations to 1986, the projected retirement figures, and the extent to which the responding firms will fill positions from within; Chapter III examines the hiring difficulties within these occupations and the sources of supply; Chapter IV describes the types of training the responding firms provide for their staff; and finally, Chapter V summarizes the major findings of the report. The survey methodology, the questionnaire and detailed job descriptions are presented in the appendices.

CHAPTER 1

OCCUPATIONAL PROFILE OF SURVEY PARTICIPANTS

This chapter provides a brief description of the plastics processing industry in Ontario, the firms that participated in this survey, and the employment and occupational characteristics of the 48 surveyed job categories (for detailed job descriptions, see Appendix C).

1.1 The Plastics Processing Industry in Ontario

According to the SPI of Canada, there are approximately 1,800 plastics processing establishments in Canada, employing about 52,000 workers in 1982. The plastics processing sector in Ontario is composed of approximately 1,000 establishments and employs almost 35,000 people, or an average of 35 employees per establishment.

A typical plastics processing firm transforms plastics materials, shapes or other forms into finished products or parts using such major processes as injection and blow moulding, extrusion, reinforced plastics fabrication, thermoforming, etc. The plastics products serve a wide range of markets, including packaging, building and construction, home and commercial furnishings, and automotive parts, to name only a few.

1.2 Profile of Survey Participants

Ninety plastics processing firms in Ontario participated in this survey during the second quarter of 1982. The employment and training data were collected through personal interviews with officials of 77 companies; 13 other firms returned the completed questionnaire without being interviewed. Of the ninety respondents, approximately 63 percent were members of the SPI of Canada.

A brief examination of the responding firms by location, size and type of business (see Appendix A, Table 1) reveals that:

- Better than 82 percent of the responding firms were located in Central Ontario; Metropolitan Toronto alone accounted for almost 39 percent. The remaining 18 percent of the respondents were located in other parts of the province.
- Seventy percent of the respondents employed less than 100 persons: small firms (employing less than 50 persons) accounted for about 39 percent, while medium-sized firms (employing between 50 to 99 persons) accounted for 31 percent. Another 18 percent were from medium-large firms (employing 100 to 199 persons), and large firms (employing 200 persons and over) accounted for about 12 percent. Larger moulding and extrusion firms (employing over 100 persons) were particularly prevalent in Metropolitan Toronto, while small and medium-sized moulding and extrusion firms were chiefly concentrated in other parts of Central Ontario.
- Two-thirds of the respondents specialized in moulding operations. Extrusion firms accounted for another 22 percent. Firms specializing in reinforced plastics, thermoforming, and other plastics processes together accounted for only 11 percent and were mainly located in Central Ontario outside Metropolitan Toronto.
- About three-quarters of the respondents specialized in one type of process, i.e., moulding or extrusion. About 7 percent of the firms specialized in two plastics processes, i.e., moulding and extrusion, moulding and thermoforming, etc. The remaining 18 percent of the responding firms had more than two plastics processes.

1.3 Employment Characteristics of the Responding Firms

The ninety responding firms employed a total of 8,003 workers in March, 1982, or about 89 employees per firm. When compared with the industry average of about 35 employees per firm, the higher average tends to indicate that the responding firms in this study were among the major employers in the plastics processing industry in Ontario. In terms of total employment, the large firms employed almost 9 times more personnel than did the small firms (see Appendix A, Table 2).

About 82 percent of the 8,003 workers were production-related personnel, while the remaining 18 percent were office employees. Almost all the responding firms (87 percent) indicated that they had more than one shift per day for their production workers. For the purpose of this study, production workers included plant-based employees, such as skilled workers, foremen and shipping personnel; office employees comprised administration and sales personnel, professionals, and management.

Almost one-half of the production personnel (45 percent) were female workers (see Table 1). Most of the female production workers (87 percent) were employed in Central Ontario; Metropolitan Toronto alone accounted for almost one-half of the female production workforce. The employment of female production workers was most prevalent in moulding processing firms (55 percent) and less prevalent in extrusion firms (27 percent) and reinforced plastics/composites firms (9 percent).

1.4 Employment in Surveyed Job Categories

The 90 responding firms reported that they employed a total of 4,279 skilled workers in the 48 surveyed job categories. This employment figure represented almost two-thirds of their production staff and indicated that about one-third were employed in other production functions not covered by this study.

TABLE 1

Total Employment by Type of Work and Sex, 1982

Breakdown	No. of Firms	Total Employees	Production Employees			Office Employees		
			Total	Male %	Female %	Total	Male %	Female %
LOCATION								
Metro Toronto	35	3,724	3,068	52.9	47.1	656	59.1	40.9
Other Parts of Central Ontario	39	2,937	2,382	52.4	47.6	555	52.6	47.4
Rest of Ontario	16	1,342	1,077	64.3	35.7	265	56.2	43.8
SIZE								
1 to 49	35	988	815	61.2	38.8	173	56.1	43.9
50 to 99	28	1,974	1,562	50.1	49.9	412	61.2	38.8
100 to 199	16	2,273	1,849	52.9	47.1	424	57.8	42.2
200 plus	11	2,768	2,301	56.6	43.4	467	50.3	49.7
TYPE OF BUSINESS								
Extrusion	20	1,788	1,431	73.2	26.8	357	65.8	34.2
Moulding	60	5,454	4,513	45.2	54.8	941	55.7	44.3
RP/C	4	429	314	91.1	8.9	115	41.7	58.3
Thermoforming	4	280	226	65.9	34.1	54	31.5	68.5
Other	2	52	43	88.4	11.6	9	55.6	44.4
TOTAL	90	8,003	6,527	54.6	45.4	1,476	56.2	43.8

Among the 48 surveyed occupations, injection moulding operators accounted for about one-third of the reported skilled employment. Foremen/supervisors accounted for another 11 percent; quality assurance technicians I & II and maintenance mechanics each accounted for about 6 percent, while injection moulding material men, compression/thermoset moulding operators, blow moulding operators, pipe/profile/sheet extrusion operators, film extrusion operators and conversion operators each accounted for about 3 percent. The other 37 job categories together accounted for the remaining quarter of the reported skilled employment (see Table 2).

For the purposes of analysis, the 48 surveyed job categories were further classified into five major occupational groups: foreman, tradesman, set-up man, quality assurance technician, and operator. Generally speaking, each occupational group requires different skill levels and training to ensure satisfactory job performance; for example, supervisory training for foremen, apprenticeship training for tradesmen, and on-the-job training for operators.

This classification resulted in operators accounting for almost two-thirds of the reported skilled employment, foremen and tradesmen each accounting for about 12 percent, and set-up men and quality assurance technicians together accounting for only 11 percent (see Table 3).

Table 2

Employment by Major Job Category, 1982

Job Category	Number of Firms Reporting	Reported Employment in March, 1982	
		Total	% of Total ^a
<u>Foreman</u>			
Foreman/Supervisor	83	453	10.6
<u>Q.A. Technician</u>			
Technician I	52	94	2.2
Technician II	50	167	3.9
<u>Tradesman</u>			
Maintenance Foreman	48	70	1.6
Mechanic	65	253	5.9
Electrician	32	78	1.8
Mould Maker	31	78	1.8
Mould & Tool Repairman	29	68	1.6
<u>Set-up Man</u>			
Injection Moulding Set-Up Man	30	72	1.7
<u>Operator</u>			
Injection Moulding Grade 2 or 3	29	100	2.3
Injection Moulding Material Man	36	131	3.1
Injection Moulding Operator	49	1,442	33.7
Compression/Thermoset Moulding Operator	10	129	3.0
Blow Moulding Operator	6	185	4.3
Pipe/Profile/Sheet Extrusion Operator	16	157	3.7
Film Extrusion Operator	5	134	3.1
Conversion Operator	3	116	2.7
Expanded Polystyrene Mould Operator	2	41	1.0
RP Hand Lay-up Operator	5	96	2.2
RP Finisher	3	35	0.8
Others	-	380	8.9
TOTAL	-	4,279	100.0

^a Totals may not add up due to rounding.

Table 3

Employment by Major Occupational Group, 1982

Occupational Group	No.	%
Foreman	554	12.9
Tradesman	489	11.4
Set-up Man	208	4.9
Q.A. Technician	261	6.1
Operator	2,767	64.7
TOTAL	4,279	100.0

Note: For a more detailed breakdown by major occupational group, see Appendix A, Table 3.

1.5 Variations in Occupational Distribution

A more detailed breakdown of the major occupational groups by location, size, and type of business (see Table 4) reveals some noteworthy characteristics which may have some training implications. For instance:

- While firms located in Metropolitan Toronto employed proportionately fewer tradesmen than firms in other locations, firms located in the rest of Ontario employed more foremen and tradesmen, but fewer operators.
- Small firms employed proportionately fewer set-up men but more operators. The opposite was true for large firms.
- Large firms also tended to employ a much greater proportion of the skilled employees in quality control.

Table 4

Percent Distribution of Employment by Major Occupational Group, 1982

Occupational Group	TOTAL	LOCATION			SIZE				TYPE OF BUSINESS				
		Metro Toronto	Rest of Central Ontario	Rest of Ontario	1-49	50-99	100-199	200 +	Extrusion	Moulding	RP/C	Thermo-forming	Other
Foreman	12.9	13.8	11.0	16.1	11.1	14.4	12.5	14.1	15.4	12.4	9.5	12.6	a
Tradesman	11.4	9.6	12.0	15.0	13.4	10.4	8.8	13.9	12.2	11.7	6.0	7.5	a
Set-up man	4.9	5.0	5.0	4.1	2.8	5.2	3.5	8.8	9.3	4.2	0.9	1.3	a
Q.A. Technician	6.1	7.1	5.1	6.0	6.2	6.6	4.1	8.0	7.0	5.8	5.2	7.5	a
Operator	64.7	64.5	66.9	58.9	66.6	63.5	71.2	55.1	56.2	65.8	78.4	71.1	a
TOTAL ^b	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

a Denotes sample size of 2 firms or less.

b Totals may not add up due to rounding.

- Extrusion firms employed proportionately more set-up men and tradesmen but fewer operators. The opposite was true for reinforced plastics/composites firms.

1.6 Pay Scales

On the average, a skilled worker surveyed by this study earned about \$9.55 per hour in March, 1982. Average hourly wage rates ranged from a high of \$12.71 for toolroom foremen to a low of \$5.98 for injection moulding machine operators. When comparing the major occupational groups, hourly rates for operators averaged \$2.36 lower than those for set-up men and \$4.62 below those for foremen/supervisors. A more detailed comparison of the pay scales by major occupational group is summarized in Table 5.

Table 5

Comparison of Pay Scales by Major Occupational Group, 1982

Occupational Group	Average Hourly Rate	Comparison of Highest and Lowest Hourly Wage Rates Among the 48 Job Categories
Foreman	\$ 11.48	Highest : Toolroom Foreman (\$12.71) Lowest : General Foreman (\$11.35)
Tradesman	\$ 10.37	Highest : Mould Maker (\$11.65) Lowest : Block Moulder (\$ 6.50)
Set-up Man	\$ 9.22	Highest : Blow Moulding Set-up Specialist (\$10.60) Lowest : Blow Moulding Trimming Machine Set-up Man (\$ 8.25)
Q.A. Technician	\$ 8.99	Highest : Q.A. Technician I (\$10.18) Lowest : Q.A. Technician II (\$ 7.79)
Operator	\$ 6.86	Highest : R.P. Winder (\$10.33) Lowest : Injection Moulding Operator (\$ 5.98)

Note: For a complete breakdown of all 48 surveyed occupations, see Appendix A, Table 4.

CHAPTER II

EMPLOYMENT OUTLOOK OF SURVEYED JOB CATEGORIES TO 1986

This chapter analyzes the employment outlook of the 48 surveyed job categories to 1986 and the projected retirement in these occupations, and examines the extent to which the responding firms will fill the positions from within.

2.1 Projected Employment Growth, 1982 - 1986

Combined employment in the 48 surveyed job categories is expected to increase by about 30 percent between 1982 and 1986, or almost 8 percent per year (see Table 6). Employment in each individual job category, however, is expected to grow at varying rates. Mould makers are projected to have the highest growth rate (110 percent) over the 1982 - 1986 period, followed by reinforced plastics hand lay-up operators (80 percent), and reinforced plastics finishers (71 percent). Other job categories with above average projected growth rates include quality assurance technicians I and II, injection moulding set-up men, and pipe/profile/sheet extrusion operators. The employment growth for blow moulding operators, film extrusion operators and conversion operators is expected to be well below average with 1 percent or less growth per year.

Over the 1982 - 1986 period, injection moulding operators alone are expected to account for almost one-third of the projected 1,285 new jobs. Foremen/supervisors and quality assurance technicians I and II are expected to each account for another 9 percent, while maintenance mechanics, mould makers, pipe/profile/sheet extrusion operators, and reinforced plastics lay-up operators are projected to each account for about 6 percent. The other 40 job categories together are expected to account for only 27 percent of the new jobs.

Table 6

Projected Employment Growth by Major Job Category, 1982 - 1986

Job Category	Total Employment		Projected Increase		% Change
	Reported 1982	Projected 1986	Total	% of Total ^a	1982 - 1986
<u>Foreman</u>					
Foreman/Supervisor	453	570	117	9.1	25.8
<u>Q.A. Technician</u>					
Technician I	94	131	37	2.9	39.4
Technician II	167	241	74	5.8	44.3
<u>Tradesman</u>					
Maintenance Foreman	70	84	14	1.1	20.0
Mechanic	253	331	78	6.1	30.8
Electrician	78	101	23	1.8	29.5
Mould Maker	78	164	86	6.7	110.3
Mould & Tool Repairman	68	91	23	1.8	33.8
<u>Set-up Man</u>					
Injection Moulding Set-up Man	72	104	32	2.5	44.4
<u>Operator</u>					
Injection Moulding Grade 2 or 3	100	132	32	2.5	32.0
Injection Moulding Material Man	131	174	43	3.3	32.8
Injection Moulding Operator	1,442	1,833	391	30.4	27.1
Compression/Thermoset Moulding Operator	129	165	36	2.8	27.9
Blow Moulding Operator	185	192	7	0.5	3.8
Pipe/Profile/Sheet Extrusion Operator	157	231	74	5.8	47.1
Film Extrusion Operator	134	139	5	0.4	3.7
Conversion Operator	116	122	6	0.5	5.2
Expanded Polystyrene Mould Operator	41	46	5	0.4	12.2
RP Hand Lay-up Operator	96	173	77	6.0	80.2
RP Finisher	35	60	25	1.9	71.4
Others	380	480	100	7.8	26.3
TOTAL	4,279	5,564	1,285	100.0	30.0

^a Totals may not add up due to rounding.

A breakdown of the projected employment growth by major occupational group (see Table 7) indicated that tradesmen are expected to have the highest employment growth (45 percent), followed by quality assurance technicians (43 percent). The growth rate for foremen, however, is projected to be well below average at 24 percent. In terms of the actual number of new jobs to be created, operators alone are expected to account for almost 60 percent over the 1982 - 1986 period. The ratio of new jobs for operators to tradesmen is expected to be approximately 3 to 1, while the ratio for operators to set-up men is expected to be much higher, 13 to 1.

Table 7
Projected Employment Growth by Major Occupational Group,
1982-1986

Occupational Group	Total Employment		Projected Increase		% Change
	Reported 1982	Projected 1986	Total	% of Total ^a	1982 - 1986
Foreman	554	689	135	10.5	24.4
Tradesman	489	708	219	17.0	44.8
Set-up Man	208	267	59	4.6	28.4
Q.A. Technician	261	372	111	8.6	42.5
Operator	2,767	3,528	761	59.2	27.5
TOTAL	4,279	5,564	1,285	100.0	30.0

^a Totals may not add up due to rounding.

2.2 Projected Employment Growth by Location, Size, and Type of Business, 1982-1986

Almost 80 percent of the projected new jobs between 1982 and 1986 are expected to be located in Central Ontario. Firms in Metropolitan Toronto alone are expected to account for 44 percent, while firms located in other parts of the province are projected to account for the remaining 20 percent of the new jobs (see Appendix A, Table 5). In terms of employment growth rates, however, firms located outside Central Ontario are expected to have the highest employment growth (43 percent).

The employment growth rates in the three categories of firms with less than 200 employees are projected to be double those for the large firms. It is anticipated that each of these categories of firms will contribute about 30 percent of the projected new jobs. In contrast, the large firms are expected to account for less than 12 percent.

Reinforced plastics/composites firms are projected to have the highest employment growth rate (59 percent), almost double the industry average of 30 percent. Extrusion and thermoforming firms, on the other hand, are expected to have lower than average employment growth. In terms of the projected new jobs, however, the moulding firms are expected to account for almost three-quarters of these jobs primarily because this group had the largest number of responding firms.

2.3 Projected Retirement, 1982 - 1986

The ninety responding firms reported that a total of 183 skilled workers are expected to retire between 1982 and 1986. This figure was about 4 percent of the total skilled employment in 1982, or approximately 2 workers per firm over the four-year period.

When categorized into major occupational groups, tradesmen are expected to have the highest retirement rate (10 percent) over the 1982 - 1986 period, while all other occupational groups are expected to be below the industry average (see Table 8). All the operators together are expected to account for almost 60 percent of the total projected retirement figure.

Table 8
Projected Retirement by Major Occupational Group,
1982 - 1986

Occupational Group	Total Employed 1982	Projected Retirement 1982-1986	Projected Retirement As a % of 1982 Employment
Foreman	554	15	2.7
Tradesman	489	49	10.0
Set-up Man	208	4	1.9
Q.A. Technician	261	7	2.7
Operator	2,767	108	3.9
TOTAL	4,279	183	4.3

Mould and tool repairmen are projected to have the highest retirement rate (19 percent), followed by injection moulding grade 2 or 3 (11 percent) and maintenance mechanics (10 percent). In actual numbers, injection moulding operators, maintenance mechanics, and mould and tool repairmen together are expected to account for almost one-half of the retirees, with injection moulding operators alone accounting for about one-third of the total (see Appendix A, Table 6).

2.4 Positions Filled From Within, 1982-1986

In this study, positions filled from within were defined as vacant positions that were expected to be filled with workers who were already employed by the firm in another occupation through a variety of means, such as promotion, demotion, transfer, etc. The data were examined as a percentage of additional manpower needs (i.e., employment growth plus retirement) to indicate the extent to which the responding firms are expected to fill the projected new positions from within.

The 90 responding firms reported that approximately one-third of the projected new positions are expected to be filled from within over the 1982-1986 period. This also implies that approximately two-thirds of the additional manpower needs are expected to come from the labour market (see Table 9).

Job categories for which positions are expected to be filled mostly from within are:

- Quality assurance technician II
- Injection moulding grade 2 or 3
- Injection moulding set-up man
- Foreman/supervisor
- Mould and tool repairman

Job categories for which positions are less likely to be filled from within are:

- Reinforced plastics hand lay-up operator
- Mould maker
- Blow moulding operator
- Compression/thermoset moulding operator
- Injection moulding operator

Table 9

Positions Filled From Within As a Percentage of Projected Additional
Manpower Needs by Major Job Category, 1982 - 1986

Job Category	Additional Manpower Needs 1982 - 1986	Number of Positions Filled From Within	Positions Filled From Within As a % of Additional Manpower Needs
<u>Foreman</u>			
Foreman/Supervisor	126	79	62.7
<u>Q.A. Technician</u>			
Technician I	38	20	52.6
Technician II	80	65	81.3
<u>Tradesman</u>			
Maintenance Foreman	19	7	36.8
Mechanic	104	42	40.4
Electrician	29	14	48.3
Mould Maker	90	11	12.2
Mould & Tool Repairman	36	20	55.6
<u>Set-up Man</u>			
Injection Moulding Set-up Man	33	23	69.7
<u>Operator</u>			
Injection Moulding Grade 2 or 3	43	32	74.4
Injection Moulding Material Man	44	11	25.0
Injection Moulding Operator	451	87	19.3
Compression/Thermoset Moulding Operator	46	5	10.9
Blow Moulding Operator	18	1	5.6
Pipe/Profile/Sheet Extrusion Operator	77	26	33.7
Film Extrusion Operator	5	1	20.0
Conversion Operator	7	-	-
Expanded Polystyrene Mould Operator	5	-	-
RP Hand Lay-up Operator	80	4	5.0
RP Finisher	25	-	-
Others	112	43	38.1
TOTAL	1,468	491	33.4

In combining the 48 surveyed job categories into 5 major occupational groups, it is interesting to note that while positions for foremen, set-up men and quality assurance technicians are most likely to be filled from within, operator positions are more likely to be filled from other sources of supply. It is also noteworthy that about one-third of the tradesman positions are expected to be filled from within; in particular, only about 12 percent of the mould maker positions are projected to be filled from within.

Table 10

Positions Filled From Within As a Percentage of Projected
Additional Manpower Needs by Major Occupational Group,
1982 - 1986

Occupational Group	Additional Manpower Needs 1982 - 1986	Number of Positions Filled From Within	Positions Filled From Within As a % of Additional Manpower Needs
Foreman	150	89	59.3
Tradesman	268	90	33.6
Set-up Man	63	38	60.3
Q.A. Technician	118	85	72.0
Operator	869	189	21.7
TOTAL	1,468	491	33.4

2.5 Positions Filled From Within by Location, Size, and Type of Business, 1982-1986

A comparison of the positions filled from within by location, size, and type of business (see Appendix A, Table 7) also revealed some very interesting characteristics:

- Firms located in other parts of Central Ontario are projected to fill relatively more vacant positions from within than firms located elsewhere.
- Approximately 57 percent of the additional manpower needs of the small firms over the 1982 - 1986 period are expected to be met internally.
- In contrast, reliance on the internal labour market for medium - large firms is substantially lower; only about 16 percent of the vacant positions are expected to be filled from within.
- Reinforced plastics firms are expected to fill almost all of their vacant positions (88 percent) from other external sources of supply. This can perhaps be explained by the fact that the RP/C firms employ relatively more operators (79 percent) who usually require less time for training in order to perform their job satisfactorily.

CHAPTER III

OCCUPATIONAL HIRING DIFFICULTIES AND SOURCES OF SUPPLY

This chapter examines the hiring difficulties of the 48 surveyed job categories, the perceived reasons for these difficulties, and the sources of supply.

3.1 Difficulty in Obtaining and Retaining Skilled Workers

On a scale from 1 to 10, responding firms were asked to indicate the degree of difficulty of obtaining and retaining the 48 surveyed job categories. For the purposes of this report, obtaining and retaining difficulty were further defined as ratings of over 7 (see Table 11). On a relative basis, the top five job categories ranked the most difficult-to-obtain and the most difficult-to-retain were as follows:

<u>Rank</u>	<u>Difficult-to-Obtain</u>	<u>Difficult-to-Retain</u>
1	Mould maker	Mould maker
2	Foreman/supervisor	Injection moulding material man
3	Maintenance foreman	Maintenance foreman
4	Mould & tool repairman	Injection moulding grade 2 or 3
5	Electrician	Mould & tool repairman

Based on the above ranking, mould makers, maintenance foremen, and mould and tool repairmen were both difficult-to-obtain and difficult-to-retain in the second quarter of 1982. For mould makers, who topped both lists, almost 81 percent of the responding firms indicated difficulty in obtaining manpower and one-third of the firms indicated difficulty in retaining manpower. It is noteworthy that all the difficult-to-obtain job categories identified are foremen/supervisors and tradesmen, who usually require a much longer period of training than the other three occupational groups under study.

Table 11

Difficulty in Obtaining and Retaining Manpower by Major Job Category

Job Category	Number of Responding Firms	% of Firms Indicating Difficulty ^a in Obtaining Manpower	% of Firms Indicating Difficulty ^a in Retaining Manpower
<u>Foreman</u>			
Foreman/Supervisor	85	56.5	3.5
<u>Q.A. Technician</u>			
Technician I	52	38.5	7.7
Technician II	49	14.3	4.1
<u>Tradesman</u>			
Maintenance Foreman	46	54.3	13.0
Mechanic	67	38.8	6.0
Electrician	32	46.9	3.1
Mould Maker	31	80.6	32.3
Mould & Tool Repairman	28	53.6	10.7
<u>Set-up Man</u>			
Injection Moulding Set-up Man	30	40.0	6.7
<u>Operator</u>			
Injection Moulding Grade 2 or 3	31	19.4	12.9
Injection Moulding Material Man	33	0.0	15.2
Injection Moulding Operator	49	2.0	4.1
Compression/Thermoset Moulding Operator	10	0.0	0.0
Blow Moulding Operator	6	33.3	0.0
Pipe/Profile/Sheet Extrusion Operator	15	40.0	6.7
Film Extrusion Operator	6	16.7	0.0
Conversion Operator	3	0.0	0.0
Expanded Polystyrene Mould Operator	2	0.0	0.0
RP Hand Lay-up Operator	5	20.0	20.0
RP Finisher	3	0.0	0.0
Others	-	-	-
TOTAL	-	-	-

^a Includes only those respondents indicating a rating of over 7 on a scale of 1 to 10.

3.2 Expected Future Hiring Difficulties

Over one-half of the respondents anticipated having difficulty in finding maintenance mechanics, mould makers, and mould and tool repairmen in the future, while about one-quarter of the firms expected difficulties in hiring foremen/supervisors and set-up men. In contrast, about 6 percent of the responding firms anticipated having difficulty in getting operators/technicians (see Table 12).

Table 12

Expected Future Hiring Difficulties by Major Occupational Group

Job Category	Number of Firms Responding	Number of Firms Anticipating Difficulties	% of Total
Foreman/Supervisor	83	21	25.3
Maintenance Mechanic	65	35	53.8
Mould Maker	31	19	61.3
Mould & Tool Repairman	28	16	57.1
Electrician	32	9	28.1
Set-up Man	62	17	27.4
Operator/Technician	200	11	5.5

3.3 Perceived Reasons For Future Hiring Difficulties

Fifty-four of the 90 responding firms (60 percent) reported a shortage or a lack of qualified personnel to fill the vacancies as the main reason for anticipated future hiring difficulties. About 36 percent of the respondents attributed future shortages to a lack of training programs for the plastics industry, while only about 13 percent of the responding firms felt that wages in the plastics industry would not be competitive enough to attract skilled workers. Other less commonly cited reasons included poor working conditions, lack of skilled immigrants, lack of career counselling in high schools, difficulty in attracting skilled workers to remote locations and poor work attitudes of employees.

The response patterns also varied considerably between firms. For example, almost 72 percent of the firms located in other parts of Central Ontario attributed the main reason for future hiring difficulties to shortages of qualified people, while only about 46 percent of the Metropolitan Toronto firms expressed the same view. It is also interesting to note that some 64 percent of the large firms cited a lack of training programs as the main reason, compared with 26 percent among the small firms (see Table 13).

Table 13

Reasons For Hiring Difficulties by Location, Size & Type of Business

Breakdown	Number of Responding Firms	Indicated Reason As a % of the Responding Firms ^a			
		Lack of Qualified Workers	Lack of Training Programs	Wages Not Competitive	Other
LOCATION					
Metro Toronto	35	45.7	40.0	17.1	34.3
Other Parts of Central Ontario	39	71.8	33.3	12.8	28.2
Rest of Ontario	16	62.5	31.3	6.3	31.3
SIZE					
1 to 49	35	54.3	25.7	20.0	31.4
50 to 99	28	57.1	42.9	7.1	32.1
100 to 199	16	68.8	25.0	12.5	31.3
200 plus	11	72.7	63.6	9.1	27.3
TYPE OF BUSINESS					
Extrusion	20	45.0	20.0	20.0	35.0
Moulding	60	63.3	41.7	13.3	30.0
RP/C	4	50.0	50.0	0.0	50.0
Thermoforming	4	100.0	25.0	0.0	25.0
Other	2	50.0	0.0	0.0	0.0
TOTAL	90	60.0	35.6	13.3	31.1

^a Percentages will not add up to 100 because firms can give more than one reason for hiring difficulties.

3.4 Sources of Supply

According to the responding firms, the most common source of supply of skilled workers was upgrading from within, followed by newspaper advertising, unsolicited applications, word of mouth, and Canada Employment Centres. Other sources such as schools, private employment agencies and soliciting from other companies were considered insignificant. A more detailed breakdown by percentage of use is summarized below:

<u>Source of Supply</u>	<u>Percentage of Use^a</u>
Upgrading From Within	34.2
Newspaper Advertising	24.4
Unsolicited Applications	13.0
Word of Mouth	12.4
Canada Employment Centres	9.2
Private Employment Agencies	2.7
Active Soliciting From Other Companies	2.1
Schools	1.6
Other	0.5

^a Totals may not add up due to rounding.

CHAPTER IV

TRAINING FOR SURVEYED JOB CATEGORIES

This chapter describes the types of training the responding firms provided to their staff and the types of training programs that were recommended.

4.1 Method of Training Current Employees

Almost all the responding firms (90 percent) provided some kind of on-the-job training in preparing their staff to adequately perform their jobs. About 31 percent of the respondents had in-house courses to prepare their skilled workers. In this study, on-the-job training was defined as non-structured, hands-on training including orientation training to prepare staff for their jobs. In-house courses were defined as structured training provided within the plant.

About one-fifth of the firms provided their employees with other structured training, such as day-release courses, night courses and intensive training courses; these courses were usually provided outside the plant. Very few firms (3 percent) had no training at all to prepare staff for their jobs.

A more detailed breakdown of the methods of training by the five major occupational groups reveals certain preferences of the responding firms (see Table 14). In-house training and day-release courses were provided more often to prepare foremen for their jobs, while night courses were used more frequently to train set-up men. In general, firms did not use day-release courses, night courses, or intensive training courses to train operators.

Table 14
Method of Training Current Employees, 1982

Occupational Group	Type of Training As a % of the Responding Firms ^a					
	No Training	Un-structured	Structured			
		On-the-Job	In-House	Day-Release	Night Course	Intensive
Foreman	3.8	90.6	40.9	31.4	27.7	28.9
Tradesman	2.4	81.7	23.7	30.2	21.3	24.3
Set-up Man	1.6	95.2	33.9	19.4	37.1	16.1
Q.A. Technician	2.9	92.2	36.3	10.8	29.4	29.4
Operator	3.5	94.5	26.4	3.5	3.5	5.5
TOTAL	3.0	90.2	31.2	18.9	20.2	19.9

^a These courses are not mutually exclusive because firms may indicate more than one type of training.

4.2 Types of Structured Training Provided

Forty-six of the 90 responding firms (51 percent) provided structured training to their skilled workers. Of these 46 firms, better than half (54 percent) provided in-house courses, 44 percent provided courses offered by colleges and universities, and 30 percent offered apprenticeship programs. Very few firms (13 percent) used courses offered by suppliers and professional associations. It is interesting to note that courses offered by colleges and universities were used more frequently by large firms and the moulders, while apprenticeship training was provided more often by firms located in the rest of Ontario and by medium-sized firms (see Appendix A, Table 8).

The majority of the firms (73 percent) paid 100 percent of the external training costs, including tuition fees, travel and accommodation expenses, regular salary, etc. For those firms who did not provide structured training, over one-half (54 percent) claimed that it was too expensive, while about 41 percent said it was not necessary.

4.3 Types of Training Programs Recommended

Survey respondents were asked to comment on the kinds of structured training programs that would be beneficial to the plastics processing industry in Ontario (see Table 15). Their opinions are summarized as follows:

- Sixty percent of the responding firms indicated that they needed specific skill training programs for their skilled workers, such as moulding and extrusion operator/technician courses. This response was expressed particularly by firms located in communities outside Central Ontario, by medium-sized and large firms, and by extruders and moulders.
- About 29 percent of the firms recommended general skill training courses such as supervisory training, quality control, plant safety, etc.
- Only about 10 percent of the respondents said they required courses offered by colleges and universities and courses for set-up men and apprentices. This response was expressed particularly by small firms.
- A few firms also suggested video training programs and correspondence courses for their employees.

Table 15
Types of Structured Training Programs Needed

Breakdown	Number of Responding Firms	Type of Program As a % of the Responding Firms ^a					
		Set-up	Apprentice-ship	General Skill	Specific Skill	College or University	Other
LOCATION							
Metro Toronto	35	11.4	8.6	25.7	68.6	8.6	8.6
Other Parts of Central Ontario	39	12.8	7.7	30.8	64.1	10.3	5.1
Rest of Ontario	16	6.3	12.5	31.3	93.8	18.8	12.5
SIZE							
1 to 49	35	17.1	14.5	31.4	51.4	8.6	8.6
50 to 99	28	7.1	7.1	25.0	92.9	10.7	10.7
100 to 199	16	6.3	0	31.3	62.5	18.8	0
200 plus	11	9.1	9.1	27.3	90.9	9.1	9.1
TYPE OF BUSINESS							
Extrusion	20	5.0	0	30.0	85.0	5.0	20.0
Moulding	60	15.0	13.3	28.3	73.3	11.7	5.0
RP/C	4	0	0	25.0	50.0	25.0	0
Thermoforming	4	0	0	25.0	0	25.0	0
Other	2	0	0	50.0	50.0	0	0
TOTAL	90	11.1	8.9	28.9	60.0	11.1	7.8

^a Percentages will not add up to 100 because firms may indicate more than one type of training.

CHAPTER V

SUMMMARY OF MAJOR FINDINGS

This chapter summarizes the major findings of the report. Again, readers are cautioned against generalizing on the basis of the survey results, which should be regarded only as an assessment of the information provided by the 90 responding firms.

5.1 Employment Profile of Survey Participants

The 90 responding firms reported total employment of about 8,000 workers, or approximately 89 employees per firm. This employment figure represented almost one-quarter of the total estimated employment of about 1,000 plastics processing establishments in Ontario. Most of these employees were located in Central Ontario, in moulding and extrusion firms, and in firms employing more than 100 workers. About 82 percent of the plastics workers were production-related personnel, of which almost one-half were female staff.

5.2 Occupational Characteristics

The responding firms employed about 4,300 skilled workers in the 48 job categories under study; they in turn accounted for almost two-thirds of the production personnel. Among the five major occupational groups, operators accounted for almost two-thirds of the reported skilled employment; injection moulding operators alone accounted for about one-third. Foremen and tradesmen together accounted for almost one-quarter, while set-up men and quality assurance technicians together accounted only for 11 percent.

5.3 Pay Scales

On the average, a skilled worker surveyed by this study earned about \$9.55 per hour in 1982. Average hourly wage rates ranged from a high of \$12.71 for toolroom foremen to a low of \$5.98 for injection moulding machine operators. The hourly rates for operators averaged \$2.36 lower than those for set-up men and \$4.62 below those for foremen/supervisors.

5.4 Projected Employment Growth

Employment in the surveyed job categories is expected to increase by about 30 percent between 1982 and 1986, or by approximately 8 percent per year. Substantially higher employment growth rates are projected for mould makers (110 percent), reinforced plastics hand lay-up operators (80 percent), and reinforced plastics finishers (71 percent). Among the five major occupational groups, tradesmen and quality assurance technicians are expected to have higher employment growth rates (45 percent and 43 percent, respectively). In terms of the actual number of new jobs, however, the operator group is projected to account for almost 60 percent of the 1,285 new jobs; injection moulding operators alone are expected to account for 30 percent.

5.5 Variations in Projected Employment Growth by Location, Size, and Type of Business

Higher employment growth rates are expected to come from firms located in communities other than Central Ontario, from firms employing less than 200 employees, and from firms specializing in reinforced plastics/composites. The majority of the new jobs, however, are expected to come from firms located in Central Ontario, from firms employing less than 200 employees, and from firms specializing in moulding operations.

5.6 Projected Retirement

About 4 percent of the reported skilled employees are expected to retire between 1982 and 1986. This means that approximately 2 skilled workers per firm are projected to retire over the four year period. The tradesman group, however, is expected to have a much higher retirement rate (10 percent), in which mould and tool repairmen are projected to have the highest retirement rate among the 48 surveyed occupations (19 percent).

5.7 Positions Filled From Within

Approximately one-third of the additional manpower needs (employment growth plus retirement) are expected to be filled from within the responding firms over the 1982-1986 period. Among the major occupational groups, positions for set-up men and quality assurance technicians are more likely to be filled internally, while positions for tradesmen and operators are more likely to be filled from other sources of supply. In the case of tradesmen, 88 percent of the mould maker positions are expected to be filled from other sources. Firms using other sources of supply to meet their manpower needs for skilled workers are more likely to be located in other parts of Central Ontario, employing between 100 and 199 employees, and specializing in reinforced plastics/composites.

5.8 Hiring Difficulties

The responding firms identified mould makers, maintenance foremen, and mould and tool repairmen to be both difficult-to-obtain and difficult-to-retain. Mould makers, who are projected to have the highest employment growth rate among the 48 surveyed occupations and whose positions are less likely to be filled from within, was the most difficult-to-obtain and most difficult-to-retain occupation in 1982. Over one-half of the respondents anticipated having difficulty

in recruiting mould makers, maintenance mechanics and mould and tool repairmen in the future. It is noteworthy that these occupations usually require a fairly long period of occupational training in order to qualify for the job. Most of the respondents (60 percent) attributed future shortages to a lack of qualified personnel to fill the vacancies.

5.9 Sources of Supply

The more commonly used sources of supply of skilled workers were upgrading from within (34 percent) and newspaper advertising (24 percent). About 10 percent of the firms used unsolicited applications, word of mouth and Canada Employment Centres to recruit their skilled workers. Other sources such as private employment agencies, active soliciting from other companies and high schools did not appear to be significant.

5.10 Training Activities

Almost all of the responding firms (90 percent) provided some kind of on-the-job training in preparing their staff to perform their jobs. About 31 percent of the respondents had structured in-house courses and another 20 percent of the firms provided their employees with other structured training, such as day-release courses, night courses, and intensive training courses. The majority of the responding firms (73 percent) paid 100 percent of the external training costs. Those firms who did not provide structured training for their staff, claimed that it was too expensive and unnecessary.

5.11 Types of Training Programs Recommended

Sixty percent of the respondents recommended specific skill training programs for their skilled employees, such as courses in moulding and extrusion. Approximately 29 percent of the firms said their employees needed general skill training such as supervisory training, quality control, and plant safety courses. Only about 10 percent of the responding firms recommended courses for set-up men and apprentices.

APPENDICES

Appendix A

Table 1

Profile of Survey Participants, 1982

Breakdown by Location and Size of Firm	Number of Respondents by Type of Business					
	Moulding	Extrusion	RP/C	Thermo- forming	Other	Total
Ontario						
1 - 49	23	7	1	2	2	35
50 - 99	19	7	1	1	0	28
100 - 199	12	2	1	1	0	16
200 plus	6	4	1	0	0	11
TOTAL	60	20	4	4	2	90
Metro Toronto						
1 - 49	9	2	0	0	0	11
50 - 99	7	2	0	0	0	9
100 - 199	6	2	0	1	0	9
200 plus	3	3	0	0	0	6
TOTAL	25	9	0	1	0	35
Other Parts of Central Ontario						
1 - 49	10	4	1	2	2	19
50 - 99	8	2	1	1	0	12
100 - 199	3	0	1	0	0	4
200 plus	2	1	1	0	0	4
TOTAL	23	7	4	3	2	39
Rest of Ontario						
1 - 49	4	1	0	0	0	5
50 - 99	4	3	0	0	0	7
100 - 199	3	0	0	0	0	3
200 plus	1	0	0	0	0	1
TOTAL	12	4	0	0	0	16

Appendix A

Table 2

Total Employment by Location, Size, and Type of Business, 1982

Breakdown	Responding Firms		Employees		Average Number of Employees per Firm
	Total	% of Total	Total	% of Total ^a	
LOCATION					
Metro Toronto	35	38.9	3,724	46.5	106.4
Other Parts of Central Ontario	39	43.3	2,937	36.7	75.3
Rest of Ontario	16	17.8	1,342	16.8	83.9
SIZE					
1 - 49	35	38.9	988	12.3	28.2
50 - 99	28	31.1	1,974	24.7	70.5
100 -199	16	17.8	2,273	28.4	142.1
200 plus	11	12.2	2,768	34.6	251.6
TYPE OF BUSINESS					
Extrusion	20	22.2	1,788	22.3	89.4
Moulding	60	66.7	5,454	68.1	90.4
RP/C	4	4.4	429	5.4	107.3
Thermoforming	4	4.4	280	3.5	70.0
Other	2	2.2	52	0.6	26.0
TOTAL	90	100.0	8,003	100.0	88.9

^a Totals may not add up due to rounding.

Appendix A

Table 3

Employment by Major Occupational Group, 1982

Occupational Group	TOTAL	LOCATION			SIZE				TYPE OF BUSINESS				
		Metro Toronto	Rest of Central Ontario	Rest of Ontario	1-49	50-99	100-199	200+	Extrusion	Moulding	RP/C	Thermo-forming	Other
Foreman	554	257	195	102	120	158	149	127	126	380	22	20	6
Tradesman	489	180	214	95	145	114	105	125	100	359	14	12	4
Set-up Man	208	94	88	26	30	57	42	79	76	128	2	2	0
Q.A. Technician	261	132	91	38	67	73	49	72	57	177	12	12	3
Operator	2,767	1,205	1,188	374	723	698	851	495	460	2,012	182	113	0
TOTAL	4,279	1,868	1,776	635	1,085	1,100	1,196	898	819	3,056	232	159	13

Appendix A

Table 4

Pay Scales by Job Category, 1982

Job Category	Average Salary (\$/hr.)	Job Category	Average Salary (\$/hr.)
Foreman/Supervisor	11.35	Pipe/Profile/Sheet Extrusion Set-up Man	8.56
Q.A. Technician I	10.18	Pipe/Profile/Sheet Extrusion Grade 2 or 3 (Operator)	8.28
Q.A. Technician II	7.79	Pipe/Profile/Sheet Extrusion Material Man	7.78
Maintenance Foreman	11.74	Pipe/Profile/Sheet Thermoforming Machine Operator	-
Mechanic	9.96	Film Set-up Man/Troubleshooter	9.10
Electrician	10.73	Film Extrusion Operator	8.08
Process Instrumentation Technician	11.33	Conversion Machine Set-up Man	9.67
Toolroom Foreman	12.71	Conversion Machine Operator	6.83
Mould Maker	11.65	Splitter/Rewind Operator	7.67
Mould & Tool Repairman	10.27	Flexographic Pressman	9.16
Injection Moulding Set-up Man	9.39	Plate Maker	9.00
Injection Moulding Grade 2 or 3	8.60	EPS Block Moulder	6.50
Injection Moulding Material Man	6.71	EPS Foam Shop Operator	7.50
Injection Moulding Machine Operator	5.98	EPS Mould Operator	8.75
Compression or Thermoset Moulding Operator	6.45	Polyurethane Operator	6.50
Compression Transfer Moulding Operator	6.63	RP/C Set-up Person	9.00
Compression Preform Machine Operator	6.92	RP/C Hand Lay-up	9.00
Rotation Moulding Machine Operator	-	RP/C Spray Gun	8.63
Blow Moulding Set-up Specialist	10.60	RP/C Fitter/Layout	10.00
Blow Moulding Machine Set-up Man	9.20	RP/C Finisher	8.00
Blow Moulding Machine Operator	7.71	RP/C Press Operator	9.00
Trimming Machine Set-up Man	8.25	RP/C Preform Operator	9.00
Thermoforming Set-up Man	9.17	RP/C Winder	10.33
Thermoforming Machine Operator	8.58	RP/C Mould Maker	10.00

Appendix A

Table 5

Projected Employment Growth by Location, Size, and
Type of Business, 1982 - 1986

Breakdown	Employment		Projected		% Change 1982 - 1986
	Reported 1982	Projected 1986	Total	% of Total	
LOCATION					
Metro Toronto	1,776	2,343	567	44.1	31.9
Other Parts of Central Ontario	1,868	2,315	447	34.8	23.9
Rest of Ontario	635	906	271	21.1	42.7
SIZE					
1 to 49	1,085	1,484	399	31.1	36.8
50 to 99	1,100	1,456	356	27.7	32.4
100 to 199	1,196	1,574	378	29.4	31.6
200 plus	898	1,050	152	11.8	16.9
TYPE OF BUSINESS					
Extrusion	819	1,004	185	14.4	22.6
Moulding	3,056	3,984	928	72.2	30.4
RP/C	232	368	136	10.6	58.6
Thermoforming	159	190	31	2.4	19.5
Other	13	18	5	0.4	38.5
TOTAL	4,279	5,564	1,285	100.0	30.0

Appendix A

Table 6

Projected Retirement by Major Job Category, 1982 - 1986

Job Category	Total Employed 1982	Projected Retirement 1982 - 1986	Projected Retirement As a % of 1982 Employment
<u>Foreman</u>			
Foreman/Supervisor	453	9	2.0
<u>Q.A. Technician</u>			
Technician I	94	1	1.1
Technician II	167	6	3.6
<u>Tradesman</u>			
Maintenance Foreman	70	5	7.1
Mechanic	253	26	10.3
Electrician	78	6	7.7
Mould Maker	78	4	5.1
Mould & Tool Repairman	68	13	19.1
<u>Set-up Man</u>			
Injection Moulding Set-up Man	72	1	1.4
<u>Operator</u>			
Injection Moulding Grade 2 or 3	100	11	11.0
Injection Moulding Material Man	131	1	0.8
Injection Moulding Operator	1,442	60	4.2
Compression/Thermoset Moulding Operator	129	10	7.8
Blow Moulding Operator	185	11	5.9
Pipe/Profile/Sheet Extrusion Operator	157	3	1.9
Film Extrusion Operator	134	0	-
Conversion Operator	116	1	0.9
Expanded Polystyrene Mould Operator	41	0	-
RP Hand Lay-up Operator	96	3	3.1
RP Finisher	35	0	-
Others	380	12	3.2
TOTAL	4,279	183	4.3

Appendix A

Table 7

Positions Filled from Within As a Percentage of Projected
Additional Manpower Needs by Location, Size & Type of Business, 1982 - 1986

Breakdown	Additional Manpower Needs 1982 - 1986	Number of Positions Filled From Within	Positions Filled From Within As a % of Additional Manpower Needs
LOCATION			
Metro Toronto	485	133	27.4
Other Parts of Central Ontario	654	260	39.8
Rest of Ontario	329	98	29.8
SIZE			
1 to 49	490	277	56.5
50 to 99	394	100	25.4
100 to 199	404	65	16.1
200 plus	180	49	27.2
TYPE OF BUSINESS			
Extrusion	206	83	40.3
Moulding	1,085	368	33.9
RP/C	139	17	12.2
Thermoforming	32	19	59.4
Other	6	4	66.6
TOTAL	1,468	491	33.4

Appendix A

Table 8

Types of Structured Training Programs Provided, 1982

Breakdown	Number of Responding Firms	Type of Program Provided As a % of the Responding Firms ^a			
		In-House	Apprenticeship	College or University	Other
LOCATION					
Metro Toronto	22	59.1	27.3	36.4	13.6
Other Parts of Central Ontario	17	47.1	29.3	52.9	5.9
Rest of Ontario	7	57.1	42.9	42.9	28.6
SIZE					
1 to 49	14	57.1	35.7	35.7	7.1
50 to 99	16	56.3	31.3	43.8	25.0
100 to 199	7	57.1	42.9	42.9	0
200 plus	9	44.4	11.1	55.6	11.1
TYPE OF BUSINESS					
Extrusion	13	61.5	38.5	23.1	23.1
Moulding	32	53.1	28.1	50.0	9.4
RP/C	1	0	0	100.0	0
Thermoforming	0	0	0	0	0
Other	0	0	0	0	0
TOTAL	46	54.3	30.4	43.5	13.0

^a Percentages will not add up to 100 because firms may indicate more than one type of program.

APPENDIX B

SURVEY METHODOLOGY

This study used the employer survey approach to determine the manpower training needs for 48 selected occupations in the plastics processing industry in Ontario over the 1982 - 1986 period. The study was jointly sponsored by the Society of the Plastics Industry of Canada, the Canada Employment and Immigration Commission, the Ontario Ministry of Colleges and Universities, and the Ontario Manpower Commission.

The data of the Ontario report were collected through 77 personal interviews and 13 mail responses, for a total of 90 firms. The firms that participated in interviews were among a representative industry sample of 100 major employers selected from the 1982 "Canadian Plastics Directory and Buyers Guide". Firms that participated by mail questionnaire only were from approximately 100 SPI of Canada members who had not been selected for interviews but were invited to participate by mail.

The Human Resources Development Committee of the SPI of Canada designed the survey questionnaire and retained two industry experts, Messrs. Jim Boles and Dennis Taylor, to conduct the interviews in Ontario, with funding from the Ontario Ministry of Colleges and Universities and the Ontario Manpower Commission. The survey questionnaire asked for detailed information on: current employment levels of the 48 surveyed job categories; their projected employment growth and retirement to 1986; pay scales; job requirements; positions filled from within; hiring difficulties, sources of supply; training activities in the responding firms, and the types of training programs recommended.

Finally, the Canada Employment and Immigration Commission and the Shell Canada Chemical Company provided computer facilities for tabulating the survey data and the Ontario Manpower Commission completed the analysis. For the purposes of analysis, the data are tabulated by location, size, and type of business:

- The responding firms are grouped under three locations: Metropolitan Toronto, other parts of Central Ontario (including Mississauga, Brampton, Ajax, Hamilton, Barrie, etc.), and the rest of Ontario (including Kitchener-Waterloo, Belleville, London, etc.)
- Firm size is measured by the total number of employees the responding firms employed in March, 1982:

	<u>Total Employment</u>
Small firm	1 - 49
Medium-sized firm	50 - 99
Medium-large firm	100 - 199
Large firm	200 plus

- The responding firms are grouped under five types of business: extrusion, moulding, reinforced plastics/composites, thermoforming, and other, which includes compounding and pelletizing, film lamination, etc.

APPENDIX C

SURVEY QUESTIONNAIRE AND JOB DESCRIPTIONS

MANPOWER TRAINING NEEDS SURVEY

OF SKILLED WORKERS

IN THE

CANADIAN PLASTICS PROCESSING INDUSTRY

SPONSORED BY
THE SOCIETY OF THE PLASTICS INDUSTRY OF CANADA
IN CONJUNCTION WITH
THE CANADIAN EMPLOYMENT AND IMMIGRATION COMMISSION

The information provided in this questionnaire is

STRICTLY CONFIDENTIAL

*and only aggregate industry results will be published
in order to ensure individual firm confidentiality*

Statement of Purpose of this Questionnaire:

This questionnaire attempts to identify the training needs for skilled workers in the plastics processing industry in the next five year period. Further it attempts to pinpoint the probable sources for these skilled workers and establish the kinds of training programs required by the Canadian plastics industry.

SECTION "A"

1. NAME OF COMPANY: _____ ADDRESS: _____
 TELEPHONE: (____) _____
 YOUR NAME: _____ POSITION: _____
 DATE OF COMPLETING QUESTIONNAIRE: _____

2. Total number of employees in your operation:

Office _____ Production _____ Total _____

of these, please estimate percentage of each which are male:

Office _____% Production _____% Total _____%

3. Is there more than one shift per day for skilled workers? ☐ Yes ☐ No

4. Does your company belong to SPI Canada? ☐ Yes ☐ No

5. What other industry organizations does your company belong to?

6. TYPE OF BUSINESS:

A. Please estimate the PERCENTAGE VALUE of your operation which involves the PROCESSING OF PLASTICS:

_____ % PLASTICS

_____ % OTHER (Specify: _____)

B. Please estimate the PERCENTAGE VALUE (according to annual dollar sales) of each APPROPRIATE PROCESS listed below:

_____ % EXTRUSION

_____ % Film Extrusion

_____ % Pipe & Tubing

_____ % Profiles

_____ % Sheet Extrusion

_____ % Wire & Cable

_____ % Other (Specify: _____)

100%

_____ % MOULDING

_____ % Extrusion Blow Moulding

_____ % Injection Blow Moulding

_____ % Injection Moulding

_____ % Reaction Injection Moulding

_____ % Rotation Moulding

_____ % Steam Chest Moulding

_____ % Thermosets (Injection, Compression, Transfer)

_____ % Other (Specify: _____)

100%

_____ % RP/C

_____ % Filament Winding

_____ % Hand Lay Up

_____ % Pultrusion

_____ % Reaction Injection Moulding

_____ % Thermosets (Compression & Transfer)

_____ % Other (Specify: _____)

100%

_____ % COMPOUNDING & PELLETIZING

_____ % THERMOFORMING

_____ % FILM LAMINATION

_____ % OTHER (Specify: _____)

100%

SECTION "B"

VACANCY	HOW MANY ADDITIONAL PEOPLE DO YOU EXPECT TO NEED DUE TO: G — Growth R — Retirement	REQUIREMENTS OF JOB												APPROXIMATE PAY SCALE (On March 1, 1982)	DIFFICULTY RECRUITING	METHOD OF TRAINING OF CURRENT EMPLOYEES Check as many as applicable	NO TRAINING Number currently employed in this position ON THE JOB TRAINING COURSE IN HOUSE OTHER A — DAY RELEASE Days Required B — NIGHT COURSE Days Required C — INTERNEVE Days Required OBTAINING Show by scale of 1 to 10 10 being very difficult
		Could this job be performed equally well by: a handicapped person a physically handicapped person a woman In your opinion, are there special reasons why this position should not be filled by women?															
		1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993				
GROUP 1																	
FOR ALL RESPONDENTS																	
General																	
001	FOREMAN/SUPERVISOR																
002	TECHNICIAN I																
003	TECHNICIAN II																
Maintenance																	
004	FOREMAN (WORKING)																
005	MECHANIC																
006	ELECTRICIAN																
007	PROCESS INSTRUMENTATION TECHNICIAN																
Toolroom																	
008	FOREMAN (WORKING)																
009	MOULD MAKER																
010	MOULD & TOOL REPAIRMAN																
OTHER																	
GROUP 2																	
FOR MOULDING/INJECTION MOULDING OPERATIONS																	
Injection Technician																	
011	GRADE 1 (SET UP MAN)																
012	GRADES 2 OR 3																
013	GRADE 4 (MATERIAL HAND)																
Operator																	
014	INJECTION MACHINE OPERATOR																
OTHER																	
GROUP 3																	
OTHER MOULDING																	
COMPRESSION OR THERMOSET																	
015	MOULDING OPERATOR																
016	COMPRESSION TRANSFER MOULDING OPERATOR																
017	COMPRESSION PREFORM MACHINE OPERATOR																
018	ROTATION MOULDING MACHINE OPERATOR																
OTHER																	
GROUP 4																	
BLOW MOULDING																	
019	BLOW MOULDING SET UP SPECIALIST																
020	BLOW MOULDING SET UP MAN																
021	BLOW MOULDING MACHINE OPERATOR																
022	TRIMMING MACHINE SET UP MAN																
OTHER																	
GROUP 5																	
FOR THERMOFORMING																	
023	SET UP MAN																
025	MACHINE OPERATOR																
OTHER																	

SECTION "C"

1. SHORTAGES

Please indicate those trades which you anticipate having difficulty in finding suitable production workers, and why:

SKILLED TRADE	REASON FOR DIFFICULTY
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

2. TRAINING

Does your company provide for any **structured** training of skilled workers?

YES ☐

A. Please describe such training programs indicating for which trades, at what institutions and the course title where possible

B. What external training costs are covered by your firm?

NO ☐

Why not? _____

In your opinion, what structured training programs would be beneficial, i.e. are needed by your firm?

3. SOURCES OF SUPPLY

What are the usual sources of supply in meeting your company's skilled worker requirements? (Please indicate the order of importance by percentage of use, totalling 100%)

_____ % School
 _____ % Newspaper Advertising
 _____ % Word-of-Mouth
 _____ % Unsolicited Applications
 _____ % Canadian Employment Centre
 _____ % Private Employment Agencies
 _____ % Upgrading from Within
 _____ % Actively Soliciting from Other Companies
 _____ % Other (Specify: _____)
 _____ 100%

PLEASE RETURN YOUR COMPLETED QUESTIONNAIRE TO:

Paulette Vinette,
 SPI Canada,
 1262 Don Mills Road
 Suite 104, Don Mills,
 Ontario M3B 2W7

GROUP 1 - FOR ALL RESPONDENTS

001

Foreman/Supervisor

Supervises, instructs, directs and trains processing department personnel in the proper performing conditions of their duties. Sets and adjusts operating conditions. Diagnoses and corrects problems in set-up and operation. Other duties might include routine equipment maintenance, giving relief and lunch breaks, and performing duties of lower classification, as required. May be hourly paid or salaried.

002

Technician I - Quality Assurance

Responsible for the interpretation and enforcement of quality standards as established by Standards Division. Directs and instructs the various inspectors assigned to the press and finishing sections. Analyzes complaints and rejections, determines the cause and initiates preventive measures, such as special inspection or, if necessary, stops production until action has taken place. Responsible for special gauges and assists in the design of same.

Instructs personnel Checks inter-plant rejects, die inspection reports and approves the acceptance of all inserts and accessories. Prepares statistical reports of the mold and subsequent operations.

003

Technician II - Quality Assurance

Inspects and gauges a variety of molded, finished and assembled plastics parts. Checks for and diagnoses defects such as blisters, cracks, defective finish, excessive flash, missing or displaced inserts. Inspects and gauges finished parts for proper drilling and tapping, deflashing, polishing, assembling, and machining. May perform 100% inspection or statistical sampling as directed. Follows prescribed methods and utilizes equipment as directed. Refers questionable conditions to supervisors but works with a minimum of supervision. May perform finishing operations to correct rejected parts.

JOB DESCRIPTIONS

These job descriptions have been prepared by an SPI Task Force to serve as a guide for this questionnaire only.

If you feel the particular description does not suit your own, simply complete the questionnaire using your job title and description in Group 11 - i.e. "ALL OTHERS"

004 Foreman (Working) - MAINTENANCE

Exercises overall supervision over operation of department to maintain buildings and equipment in satisfactory condition, and makes repairs as necessary. Plans and operates preventive maintenance program. Responsible for plant utilities and power plant. Provides janitor service. May act as plant safety coordinator. Responsible for working conditions, discipline, and morale in department. Directs and trains junior supervisors and delegates responsibility and authority. Interprets and administers management policies and decisions.

005 Mechanic - MAINTENANCE

Keeps machinery, equipment and plant structure in operating condition. Maintains and installs piping, fittings, valves, gauges, traps, and all types of controls for high and low pressure hydraulic systems and steam and air lines. Performs carpentry and sheet metal work in fabricating and repairing benches, guards, boxes, trays, partitions, etc. Prepares locations and foundations. Lubricates machines and equipment and performs other plant maintenance work as required. Works under supervision.

006 Electrician - MAINTENANCE

Installs, maintains, repairs and adjusts a variety of electrical equipment such as motors, lighting circuits, power lines, fixtures, switches and controls. Performs routine maintenance and repairs on high frequency preheaters. Diagnoses and corrects difficulties to minimize production interruptions. Operates under supervision.

007 Process Instrumentation Technician - MAINTENANCE

Maintains processing controls. Familiar with components that make up machine control settings. Maintains and repairs printed circuitry.

008 Foreman (Working) - TOOLROOM

Exercises overall supervision over operation of department to alter, maintain and repair moulds, dies, jigs and fixtures, tools and other equipment. Plans work of department to meet production schedules. Controls quality of work in Tool Room and indirectly in production departments. Responsible for working conditions, discipline, and morale in his department. Directs and trains junior supervisors and delegates responsibility and authority. Interprets and administers management policies and decisions.

009 Mould Maker - TOOLROOM

Designs and builds new tools and moulds.

010 Mould & Tool Repairman - TOOLROOM

Overhauls moulds and tools, and makes complicated repairs in restoring moulds and tooling. Operations include lapping, grinding, welding, machining, polishing. Uses a variety of hand tools and machines, including lathe, mill, grinder, etc.

GROUP 2 - FOR MOULDING/INJECTION MOULDING OPERATIONS

011 Grade 1 (Set-up Man) - INJECTION TECHNICIAN

As directed by the foreman, supervises and leads all department shift activities in his area. Trains all shift personnel in the use of required plant facilities, procedures and standards of quality. Responsible for machine set ups and adjustments; mould setting and storage. Ensures quality standards are met. Tests new or repaired moulds. Completes production records. Has a thorough knowledge of all plastic raw materials, their use, characteristics, limitations, and proper handling.

Assumes responsibilities of Shift Production Manager when assigned this duty in his absence. Assigns operators and assistants, and schedules breaks.

012 Grades 2 or 3 - INJECTION TECHNICIAN

Assists Shift Supervisor in all shift operations under direction. Under Shift Supervisor's direction; sets up tools, removes and stores tools; starts up machines, makes adjustments; tests new moulds. Has a thorough knowledge of all plastic raw materials, proper handling and storage, as applied to injection moulding. Trains subordinates in his duties.

013 Grade 4 (Material Man) - INJECTION TECHNICIAN

Assists and trains under higher Technicians, does assigned work, usual utility duties, including: box making, clean and load hoppers, clean grinders, pre-heat materials, regrind materials, mix and blend materials, keeps area clean; all under direct supervision. Acts as relief operator in order to gain knowledge of products, machines, materials, moulding procedures, product quality.

014 Injection Machine Operator - OPERATOR

Operates an injection moulding machine under close supervision. Usual duties may include removing parts from the machine, loading inserts in the mould, removing inserts from the part, inspection, degating, grinding runners and inspecting parts, removing flash and performing a variety of minor finishing operations. May also pack finished parts, clean around machine, fill hoppers, and keep production and spoilage records.

GROUP 3 - OTHER MOULDING

015 Compression or Thermoset Moulding Operator
(see 014 - Injection Machine Operator)

016 Compression Transfer Moulding Operator
(see 014 - Injection Machine Operator)

017 Compression Preform Machine Operator

Sets up and adjusts a variety of dies in automatic preform machines to produce pills of proper weight, hardness and dimension. Maintains preform machines by lubrication, cleaning and adjustment. Determines needs for die repair. Adjusts dies and machines to maintain proper quality. Works under some supervision. Keeps production records.

018 Rotation Moulding Machine Operator

GROUP 4 - BLOW MOULDING

019 Blow Moulding Set-Up Specialist

Sets up and operates all types of blowmoulding machines. Sets machine controls. Makes minor repairs and adjustments. Tests new materials, moulds, inserts, heads and auxiliary equipment as required. Directs and instructs other blowing set-up men and operators.

020 Blow Moulding Set-Up Man

Sets up and operates a variety of blowmoulding machines. Performs all types of set-ups, mould changes and makes necessary minor repairs and adjustments. Directs operators.

021 Blow Moulding Machine Operator

Feeds materials into a blowmoulding machine and operates the machine to produce various types of blowmoulded containers or parts to specifications, with a minimum of supervision from the set-up men. Observes gauges to ensure specified moulding temperature is maintained. Inspects the process and product and makes adjustments to meet the quality and production standards set. Performs routine maintenance.

022 Trimming Machine Set-Up Man

Sets up, starts, adjusts and repairs trimmers, flame treaters, compression units and other related equipment. May assist mechanics at times in repair work. Works under limited supervision. Directs and instructs Finishers as required.

GROUP 5 - THERMOFORMING

023 Set-Up Man

Responsible for organizing and carrying out a rigid schedule of maintenance of machinery (e.g. air compressors, vacuum loaders, cooling pumps, production line, extruders). Double-checks foreman's reports to spot trends, identify maintenance needs. From production schedules, plans and carries out change of tools, moulds, cavities and dies. In spare time does machinery, produces spare parts, moulds, tooling.

025 Machine Operator

Responsible for continuous in-line monitoring of operations (e.g. air pressures, vacuum, oil and grease reservoirs, melt temperatures, controllers, ammeters, RPM, back pressure). Must recognize effect of these on quality, must recognize when something is going wrong. Must know what to do when there are power failures, do minor repairs, refer major ones to Maintenance Man. Fills out production reports, supervises production people.

GROUP 6 - FOR EXTRUSION - PIPE, PROFILE, SHEET
(Includes Converting Sheets)

026 Grade 1 (Set-Up Man) - TECHNICIAN

Supervises, instructs, directs and trains extrusion department personnel in the proper performance of their duties. Sets up the extrusion line for the initial run with the assistance of the operator and once the line is running satisfactorily, turns it over to the extrusion operator.

027 Grades 2 or 3 (Operator) - TECHNICIAN

Operates the extrusion line and auxiliary equipment on any type of die with little or some supervision. Requires ability to vary prescribed operating conditions necessary to produce quality product. Must carry out periodic dimensional checks of the product to make sure that it meets specifications.

027

Grades 2 or 3 (Operator) - TECHNICIAN continued ...

Works with a variety of extrusion materials. Changes and adjusts operating conditions such as heat, pressure, screw and conveyor speed, and cooling system to maintain proper quality. Fills hopper and lubricates and cleans machines. Keeps production records.

028

Grade 4 (Materials Man) - TECHNICIAN

In charge of all raw material warehousing. Sees that materials needed for daily production are set out in proper areas and available to production department. Mixes, blends or colors raw materials as required. Returns unused raw material to proper location in warehouse.

029

Thermoforming Machine Operator - TECHNICIAN

Sets up and operates sheet thermoformers to produce cups, lids, or other products. Adjusts and maintains the machines to obtain the required product specifications and quality. Performs routine machine maintenance.

GROUP 7 - FOR FILM EXTRUSION

030

Set-Up Man/Troubleshooter - FILM EXTRUSION DEPT.

Sets up dies in extrusion machines so that machines are ready for production when set-up is completed. Sets and adjusts machine controls. Works closely with shift foreman and is capable of assuming temporary supervisory responsibilities in the absence of the foreman. Diagnoses and corrects problems in set-up and operation of extruders. Performs routine maintenance on an extruding machine.

- 031 Extruder Operator - FOR FILM EXTRUSION
Operates a film extrusion machine to produce various types of plastic film to specifications, under limited supervision. Monitors quantity and quality of film produced, and makes any necessary adjustments to maintain quality standards. May perform routine maintenance on an extruding machine. May feed materials into the extruding machine.
- 032 Conversion (Bag Making) Machine Set-Up Man - CONVERSION DEPARTMENT
Sets up and adjusts converting machines, such as bag-making machines, to convert plastic film into various products. Makes product changeovers where necessary. Installs and adjusts cut-off knife and bottom forming gussets, header or other sealers. Starts machine, sets automatic counters and regulates machine speed. Inspects finished product for conformance to specifications. Directs helper to lubricate and clean equipment. Performs routine maintenance.
- 033 Conversion Machine Operator - CONVERSION DEPT.
Operates one or more machines that automatically convert plastic film to form bags or other products. Threads material from roll through guides and rollers to printer, cutters, folding devices or sealer. Starts machine, observes operation, and adjusts machine to ensure uniform printing, folding or sealing operations. Selects sample bags and inspects product for conformance to specifications. Performs routine maintenance.
- 034 Splitter/Rewind Operator - CONVERSION DEPARTMENT
Operates slitting machine to cut rolls of film into strips or specified widths. Records production data and equipment performance. Checks width accuracy; inspects rolls for printing.
- 035 Flexographic Pressman - PRINTING DEPARTMENT
Sets up and operates flexographic printing press to print designs, trademarks or other data on rolls of plastic film. Mounts and checks plates for correctness of design and wording. Checks correctness of ink type; determines viscosity of ink and adds solvents as required. Makes machine adjustments and performs checks for correct ink adhesion, print position and register, print quality and print wording. Cleans plate, cylinder and fountains. Lubricates moving parts as needed.
- 036 Plate Maker - PRINTING DEPARTMENT
Makes flexible plates or dies for flexographic printing presses.
- GROUP 8 - EXPANDED POLYSTYRENE
- 037 Block Moulder
Has a general knowledge of the chemical reactions of the various polymers used. Pre-foams materials to required densities. Moulds and weighs polystyrene blocks.
- 038 Foam Shop Operator
Sets up and operates moulding equipment, wire cutters, and all fabricating equipment. Responsible for all billet cutting.
- 039 Mould Operator
Sets up and operates pre-expanders and moulds, establishes cycles, maintains records, and performs minor maintenance on machine. Responsible for producing and packing a quality part.

GROUP 9 - FOR POLYURETHANE FOAM

040 Operator

Knowledgeable on polyurethane lamination, the chemical reaction and formulation of polyurethane foam, the operation of various lamination machines (for spray applications, liquid flow, floating head presses and constrained presses), and how to effectively report to management.

GROUP 10 - FOR REINFORCED PLASTICS/COMPOSITES

041 Set-Up Person

Sets up moulds in presses so that presses are ready for production when set-up is completed. Removes mould and auxiliary equipment from press, sets next mould, locates and fastens on press, sets ejection, sets and adjusts to prescribed stroke, changing piping as required. Sets and adjusts machine controls. Sets up and prepares auxiliary equipment such as insert loaders, material loaders, shrink frames, pre-heaters, finishing tools and checks operation of press. Operates under detailed instructions and specifications but requires considerable ingenuity to improvise and adapt when necessary. May instruct trainees who assist him in mould and equipment changes and set-ups.

Works closely with shift foreman and is capable of assuming temporary supervisory responsibilities in the absence of the foreman. Diagnoses and corrects problems in set-up and operation of moulds, presses and other equipment. Sets and periodically adjusts machines operating condition. May perform routine maintenance, gives breaks, fills hoppers or sets moulds as required.

042 RP Hand Lay-Up

The R.P. Hand Lay-up Operator uses a variety of small hand and power tools to lay out and fabricate components and structures. May operate spray-up equipment in applying reinforcing material and resin to moulds or alternately use hand lay-up techniques. Works from blueprints or follows prescribed procedures. May perform finishing operations.

043 RP Spray Gun

The Spray-Gun Operator is capable of handling all tools in a lay-up operation, in particular, a complete spray-gun assembly which is used for the application of resin or resin and reinforcing material. This responsibility may include setting up similar equipment for "chop winders". This operator is also responsible for complete maintenance of the components of the spray-gun assembly.

044 RP Fitter/RP Layout

The Fitter/Layout Person is capable of using all hand and power tools required to cut component parts to fit a particular assembly. Ability to read blueprints is mandatory. This person must be able to develop patterns for intersecting components, as well as laying out orientations. As a fitter, this person must be able to assemble any and all components as per blueprints, shop drawings or isometric and do so with precision and accuracy.

045 RP Finisher

As an RP Finisher, this person must be able to handle all hand and power tools, as well as spray equipment for applying resin as a finish coat. Knowledge of proper repairing techniques is essential, as well as standards to which various products must conform in the finished state.

046 RP Press Operator

Sets up and adjusts a variety of dies in automatic preform machines to produce pills of proper weight, hardness and dimension. Maintains preform machines by lubrication, cleaning and adjustment. Determines need for die repair. Adjusts dies and machines to maintain proper quality. Works under some supervision. Keeps production records.

047 RP Preform Operator

Operates preform machine after set-ups are completed. Loads materials to machine. Removes preforms from forming machines and transfers same to drying oven. May also operate automatic preform equipment with integral ovens. Checks weight and uniformity of preform periodically, and makes adjustments to feed and spray mechanisms. Removes preforms from oven and inspects. Works under supervision. Keeps production records.

048 RP Winder

Sets up and operates a filament winding machine in which continuous strands or bands of reinforcing materials are drawn through a resin bath and wound on to a mandrel (mould), from a traversing carriage which passes from end to end of the mandrel. Checks band lay-out and width during operation. Removes excess resin and air from resin with rollers, cures and cuts product to desired length. This responsibility may include the operation of a computer controlled filament winder, depending on the sophistication of the equipment, and the job descriptions in specific shops.

049 RP MouldMaker

Builds moulds by interpreting blueprints and/or shop drawings and using various materials such as wood, masonite, sheet metal and cardboard. Works closely with the Fitter/Layout person through a Foreman, in order to build moulds that are compatible with production schedules.

